UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,959	08/22/2003	William Sumner Brown	WSB1	3007

7590 01/10/2007

SUMNER BROWN
35 ROSS ROAD
BELMONT, MA 02478-2114

EXAMINER	
KURR, JASON RICHARD	
ART UNIT	PAPER NUMBER
2615	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/646,959	BROWN, WILLIAM SUMNER	
	Examiner	Art Unit	
	Jason R. Kurr	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 9-20* is/are rejected.

7)☒ Claim(s) *8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/1/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 7 and 8 are objected to because of the following informalities:

Claims 7 and 8 recite the limitation "said host vehicle's transmission" in each claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 8 recites the limitation "said host vehicle's radio or entertainment sound system" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4, 11 and 13-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claims 4, 11 and 13, the term "perhaps indirectly" is disclosed in the claim. It is unclear to the Examiner as to what the term is referring. The term "perhaps" does not specify the function of the present claim (i.e. "perhaps it can perform this task or perhaps it can not"), thus claim is rendered as indefinite.

With respect to claim 13, it is unclear to the Examiner from the claim language as to how the directional properties of a microphone relate to frequencies in a spectral

region. It is understood that a microphone may be designed to accept signals within a certain frequency range by either its' physical makeup or by being equipped with a resulting filter. It is also understood that directional microphones are limited in bandwidth, however the present claim states "said directionally discriminating microphones have effective directional properties" (bandwidth?). The effective directional properties are not defined within the claim. Thus it is not clear as to how the claimed control signal is responding in respect to a signal level of a frequency, because the disclosure of this frequency in a spectral region has not been clearly defined.

With respect to claim 14, the Applicant claims that the level-dependent signal processing means has essentially no effect on passing signals when sound levels are low compared to signal levels. It is unclear to the Examiner as to how signal levels, which are electrical, are being compared to sound levels, which are a physical change in pressure. It is also unclear as which sound levels and signal levels are being compared.

With respect to claim 14, the term "essentially" is a relative term, which renders the claim indefinite. The term "essentially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

With respect to claim 15, it is unclear to the Examiner as to where the large opening of the acoustic waveguide is being implemented on the vehicle. The claim states that the large opening is in the rear of the vehicle, not specifically on the outside of the vehicle. This limitation would only allow for the reception of acoustic sound

emanating from within the vehicle. The Examiner believes that the claim should state that the large opening of the microphone is located on the exterior of the vehicle.

With respect to claim 16, the claim states, "wherein the openings of said large end", referring to multiple openings. Whereas in claim 15, a reference is made to only one opening in the large end. It is unclear as to what the multiple openings in claim 16 is referring, hence rendering the claim as indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 19 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Yun (US 2003/0108212 A1).

With respect to claim 19, Yun discloses a safety system for a machine whose driver or operator or pilot can be protected from audible noise, said safety system comprising: (a) sensing means on said machine (fig.2 "S1-S4", pg.2 [0019]), (b) signal processing means (fig.2 #2,4 pg.2 [0017]), and (c) sound producing means (fig.2

"SP1SP5") positioned so that said driver, pilot, or operator can clearly hear sounds produced by said sound producing means, the elements of said safety system configured so that said driver or operator or pilot can hear sounds representing things or conditions of interest in or near said machine that are sensed by said sensing means, and said driver or operator or pilot can tell by ear when items of interest are in or near his machine, and said driver or operator or pilot can tell by ear the approximate location and importance of said items of interest, whereby said driver, operator, or pilot uses his innate ability to interpret sounds coming from his environment to focus his or her attention on important conditions or objects (pg.1 [0006] pg.2 [0024]).

With respect to claim 20, Yun discloses a method for making a driver of a host vehicle aware of nearby vehicles that are located behind or beside said host vehicle and close enough to said host vehicle that said driver should be aware of said nearby vehicles for purposes of safe driving, comprising: (a) sensing sounds from said nearby vehicles while discriminating against sounds that come from said host vehicle (fig.2 "S1-S4", pg.2 [0019]), (b) converting said sensed sounds into signals that represent said sounds (fig.4), (c) processing said signals into new, processed signals (pg.2 [0024] fig.2 #2,4), and (d) producing new sounds for said driver from said processed signals (fig.2 "SP1-SP5"), said new sounds representing to said driver sounds made by said nearby vehicles, and said new sounds having low enough volume, when there are no said nearby vehicles, that said driver is unaware of any of said new sounds that originate from said host vehicle, whereby said driver will stay alert to said nearby vehicles in his

driving environment, and said driver will not be annoyed by additional sounds from said host vehicle (pg.1 [0006] pg.2 [0024]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 6-7 and 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yun (US 2003/0108212 A1) in view of Takeuchi (US 4,528,563).

With respect to claim 1, Yun discloses a safety system for a host vehicle whose driver can be protected from audible noise, said safety system comprising: (a) one or more microphones on said host vehicle (fig.2 "S1-S4", pg.2 [0019]), (b) signal processing means (fig.2 #2,4 pg.2 [0017]), and (c) one or more loudspeakers positioned so that said driver can clearly hear sounds produced by said loudspeakers (fig.2 "SP1SP5"), said signal processing means receiving signals from said microphones, said loudspeakers receiving signals from said signal processing means, and said safety system is configured so that said driver can hear sounds resembling the sounds made by nearby vehicles that are close enough to said host vehicle that said driver should be aware of said nearby vehicles for purposes of safe driving, said driver can

approximately locate by ear the position of said nearby vehicles that he or she apparently hears (pg.1 [0006]), and said driver is generally unaware of sounds from said safety system that originate from said host vehicle, whereby said driver is made aware of the presence of said nearby vehicles behind or beside said host vehicle, and said driver is not annoyed by additional noise from said host vehicle.

Yun does not disclose expressly wherein the acoustic sensors (i.e. microphones) are directionally discriminating against noise emitting from the host vehicle.

Takeuchi discloses a system for sensing obstructions wherein the sensors are directional and they discriminate as to not sense noise emitting from the host vehicle (fig.2, col.3 ln.12-27).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to make the sensors of Yun directional, as demonstrated by Takeuchi. The motivation for doing so would have been to detect sound sources in desirable directions, such as directly behind the vehicle, or in blind spots. This would give the vehicle's operator an audible warning as to the location of possible hazardous objects in visually problematic areas.

With respect to claims 6 and 7, Yun discloses the safety system as in claim 1, wherein said signal processing means includes means for automatically setting the sound volume of said safety system to a level sensitive enough to hear conversations outside said host vehicle when said host vehicle is moving slowly, whereby reducing the risk of injuring people while said host vehicle is moving backward and wherein said

signal processing means includes means for automatically setting the sound volume of said safety system to a level sensitive enough to hear conversations outside said host vehicle when said host vehicle's transmission is in reverse, whereby reducing the risk of injuring people while said host vehicle is moving backward. It is implied that input microphone processing circuits contain amplifiers to automatically adjust the level on the input microphone signal. These pre-amplifications to the input signal would occur regardless of the direction of the vehicle; hence the sound volume is always being adjusted. The term "sensitive enough" does not describe a limit or range that sound volume should be set to. Therefor, any amplification level that the Yun reference achieves anticipates the claim language "sensitive enough".

With respect to claim 11, Yun discloses a safety system as in claim 1 wherein at least one of said directionally discriminating microphones is a left microphone that is deployed to preferentially sense sounds that originate from the left side of said host vehicle (fig.2 "S1,S3"), and at least one of said directionally discriminating microphones is a right microphone that is deployed to preferentially sense sounds that originate from the right side of said host vehicle (fig.2 "S2,S4")(pg.2 [0019]), and said signal processing means include one filter means (fig.2 #4) that predominately affects signals coming, perhaps indirectly, from said left microphone, and another filter means (fig.2 #4) that predominately affects signals coming, perhaps indirectly, from said right microphone, and these said filter means for the left and right signals affect the signals from said left microphone and said right microphone differently, whereby these

deliberately unmatched filters allow people with one ear more capable than the other to determine with one good ear on which side a said nearby vehicle is located (pg.2 [0019][0023]).

With respect to claim 12, Yun discloses a safety system as in claim 11 wherein the signals from said unmatched filters are combined into a single signal before being converted to sound by said loudspeakers (fig.2 "signal from #2 to SP1-5").

With respect to claim 13, Yun discloses a safety system as in claim 1 wherein said signal processing means includes one or more level-dependent signal processing means that have frequency response properties that change based on a control signal, said control signal coming, perhaps indirectly, from said directionally discriminating microphones, said control signal responding to signal levels of frequencies in a spectral region for which said directionally discriminating microphones have effective directional properties, said level-dependent signal processing means having as their signal input, perhaps indirectly, signals from said directionally discriminating microphones, said level-dependent signal processing means having outputs that go, perhaps indirectly, to said loudspeakers, and said frequency response properties change at rates that are substantially below audio frequencies, whereby the sounds provided by said safety system to said driver are realistic representations of sounds made by nearby vehicles (pg.2 [0019]).

With respect to claim 14, Yun discloses a safety system as in claim 13 wherein said level-dependent signal processing means have essentially no effect on signals that pass through them when sound levels are low compared to signal levels when there is a said nearby vehicle moving at highway speed (pg.2 [0019]).

With respect to claim 15, Yun discloses a safety system as in claim 1 wherein the directional properties of one or more of said directionally discriminating microphones are achieved by a tapered acoustic waveguide, wherein said waveguide has its larger end opening in the rear of said host vehicle, and with the smaller end of said waveguide inside said host vehicle, and with said smaller end of said waveguide holding any components of said directionally discriminating microphone that are sensitive to water, thereby achieving directionally discriminating microphone properties and sheltering water sensitive components (fig.2 "S1-S4").

With respect to claim 16, Yun discloses a safety system as in claim 15 wherein the openings of said large end of said acoustic waveguides are shaped so that the spatial patterns of high selectivity have a desirable, asymmetric shape about the axes of highest sensitivity (fig.2 "S1-S4").

With respect to claim 17, Yun discloses a safety system as in claim 15 in view of Taguchi, wherein the directions of high sensitivity of said acoustic waveguides point nearly straight back from said host vehicle and the openings of said acoustic

waveguides are substantially asymmetric from left to right so that for sounds originating to the sides of said host vehicle, substantially away from the direction of peak sensitivity, at least one of said microphones is more sensitive to sounds originating from the left of said host vehicle, and at least one of said microphones is more sensitive to sounds originating from the right of said host vehicle (Takeuchi: fig.2 "A-E").

The reasons and motivation to combine Taguchi with Yun would have been the same as presented above in the rejection of claim 1.

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yun (US 2003/0108212 A1) in view of Takeuchi (US 4,528,563) and in further view of Farmer et al (US 5,979,586).

With respect to claim 2, Yun discloses a safety system as in claim 1, however does not disclose expressly wherein said loudspeakers are mounted in positions such that they are closer to said driver's ears than to the ears of other occupants of said host vehicle when seated in vehicle seats, whereby passenger in said host vehicle are generally not aware of sounds from said safety system.

Farmer discloses a collision warning system wherein loudspeakers (fig.7 #16) are mounted in positions such that they are closer to said driver's ears than to the ears of other occupants of said host vehicle when seated in vehicle seats, whereby passenger in said host vehicle are generally not aware of sounds from said safety system (col.5 ln.1-13).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the loudspeaker arrangement of Farmer in the invention of Yun.

The motivation for doing so would have been to provide the driver with a sound that radiates directionally with respect to the detected microphone sound. This would allow the driver to quickly realize the direction of the sound source. A localized sound system around the driver would also allow any passengers to enjoy other types of acoustic entertainment without the interruption of the warning system.

With respect to claim 3, Yun discloses a safety system as in claim 1 in view of Farmer, wherein said driver is protected from audible noise by a passenger compartment of said host vehicle (Yun: fig.2), said loudspeakers are two or more in

number (Yun: fig.2 "SP1-SP5"), and at least one of said loudspeakers is mounted in a position that is closer to the left ear of said driver than to the right ear of said driver, and at least one other of said loudspeakers is mounted closer to the right ear of said driver than it is to the left ear of said driver (Farmer: fig.7 #16), and said loudspeakers are positioned close to the driver's ears compared with distances to said passenger compartment windows and roof, and said loudspeakers close to the left ear receive, perhaps indirectly, signals that originated from said directionally discriminating microphones that are shaped, located and oriented so as to favor sounds originating from the left side of said host vehicle and said loudspeakers close to the right ear receive, perhaps indirectly, signals that originated from said directionally discriminating microphones that are shaped, located and oriented so as to favor sounds originating on the right side of said host vehicle, whereby said driver can easily determine by ear the location of said nearby vehicles (Yun: pg.2 [0024])(Farmer: col.5 ln.1-13).

The reasons and motivation to use the speaker arrangement of Farmer in the invention of Yun would have been the same as presented in the rejection of claim 2.

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yun (US 2003/0108212 A1) in view of Takeuchi (US 4,528,563) and in further view of Werrbach (US 6,266,423 B1).

With respect to claim 4, Yun discloses a safety system as in claim 1, however does not disclose expressly wherein said signal processing means includes a dynamic

range compressing signal processing means that has as it input, perhaps indirectly, a signal from said microphones, and whose output goes, perhaps indirectly, to said loudspeakers, and whose gain is automatically and progressively reduced as the signal levels increase, whereby mitigating unusually loud sounds.

Werrbach discloses a dynamic range compressing signal processing means that automatically and progressively reduces gain as a signal level increases, whereby mitigating unusually loud sounds (col.1 ln.37-65).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the dynamic range compressing signal processing means as disclosed by Werrbach on the microphone inputs of Yun.

The motivation for doing so would have been to prevent any loud signal spikes that would result in a displeasing audible sound.

With respect to claim 5, Yun discloses a safety system as in claim 1, however does not disclose expressly further including at least one pavement condition monitoring microphone deployed such that said pavement condition monitoring microphone senses predominately tire noise from said host vehicle, the signals from said pavement condition monitoring microphones being used to change properties of said signal processing means, whereby adjusting said safety system for variable conditions of pavement conditions, weather conditions, and the speed of said host vehicle.

Terai discloses an apparatus for influencing oscillation in the passenger cabin of a motor vehicle, wherein at least one pavement condition monitoring microphone (fig.1

#1) deployed such that said pavement condition monitoring microphone senses predominately tire noise from said host vehicle (col.6 ln.24-29), the signals from said pavement condition monitoring microphones being used to change properties of a signal processing means (fig.1 "prediction filter"), whereby adjusting said safety system for variable conditions of pavement conditions, weather conditions, and the speed of said host vehicle (col.1 ln.11-15).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the oscillation influencing apparatus of Terai in the invention of Yun.

The motivation for doing so would have been to cancel undesirable noise in the cabin of the vehicle, such as road and engine noise.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yun (US 2003/0108212 A1) in view of Takeuchi (US 4,528,563) and in further view of Sindle (US 5,173,881).

With respect to claim 9, Yun discloses a safety system as in claim 1, however does not disclose expressly wherein said signal processing means includes a volume control means that said driver can adjust to change the level of sound that reaches his or her ears from said loudspeakers for a given circumstance of sound producing objects outside and near said host vehicle.

Sindle discloses a warning system for a vehicle wherein a signal processing means includes a volume control means that said driver can adjust to change the level of sound that reaches his or her ears from said loudspeakers for a given circumstance of sound producing objects outside and near said host vehicle (col.6 ln.13-15).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to allow a driver to control the volume of the audio signal being reproduced such as disclosed by Sindle.

The motivation for doing so would have been to allow a user to adjust the reproduced sounds to a comfortable level, as to not disturb passengers in the vehicle.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yun (US 2003/0108212 A1) in view of Takeuchi (US 4,528,563) and in further view of Kawakami (US 6,407,733 B1).

With respect to claim 10, Yun discloses a safety system as in claim 1 wherein said host vehicle has a driver's seat in a passenger compartment (fig.2), however does

not disclose expressly further including driver changeable control means that affect the characteristics of said signal processing means, said driver changeable control means being mounted on said driver's seat or a head rest on said driver's seat.

Kawakami discloses a driver changeable controller for vehicle systems that is mounted on said driver's seat or a headrest on said driver's seat (col.1 ln.50-60, fig.6).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the driver changeable control means of Kawakami to control the safety system of Yun.

The motivation for doing so would have been to allow a driver to gain easy access to control inputs of the system. This would allow the driver to manipulate functions such as volume control without moving from the driver's seat.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yun (US 2003/0108212 A1) in view of Takeuchi (US 4,528,563) and in further view of Marshall (US 2,131,593).

With respect to claim 18, Yun discloses a safety system as in claim 15, however does not disclose expressly wherein said large end openings of said tapered acoustic waveguides are covered by screens, whereby keeping insects and other objects out of said waveguides and reducing noise caused by air moving past said host vehicle.

Marshall discloses an acoustic sensor that is covered by a screen (fig.3)

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the screen of Marshall to cover the acoustic sensors of Yun. The motivation for doing so would have been to block foreign objects from damaging the sensors.

Allowable Subject Matter

Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The claim must also be rewritten to overcome the lack of antecedence as presented in the "Claim Objections" section above.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lehmann (US 6,731,204 B2) discloses an object detection system providing driver information through sound.

Curtin (US 6,097,285) discloses an automotive auditory feedback of changing conditions outside the vehicle cabin.

Litkouhi et al (US 6,876,298 B2) discloses an audible warning for vehicle safety systems.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason R. Kurr whose telephone number is (571) 272-0552. The examiner can normally be reached on M-F 10:00am to 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571) 273-8300. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JK
JK

VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600